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## **4. SIMULATORS FOR CORPORATE PILOT TRAINING AND EVALUATION**

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First, I would like to thank Bill Larsen, Vickie Gardner, and their team for organizing this seminar and workshop. I would like to thank each of you for being here to share your expertise. And I would like to give special thanks to all of those very talented individuals and teams that have given us the simulators we use today. We've come a long way from the School Link and ANT-18 Blue Box.

You know, I'm kind of surprised this meeting received approval to be held in the San Francisco Bay Area, what with all of the faults around here. Apparently we accepted the notion that while the experts continue trying to improve the earthquake tolerance of the local buildings and highways, the area's many good characteristics make it a very desirable place to visit, work, and live. If only Greg McGowan had so much luck getting approval for his simulator—even though they may have a few faults.

I first became familiar with "simulators" for pilot training and evaluation when I started instructing at the University of Illinois, Institute of Aviation, in 1968. There I learned to use a School Link and ANT-18 Blue Box in conjunction with a classroom, chalkboard, and an Aeronca CH7FC airplane to train and evaluate candidates for the Private Pilot Airplane Certificate. Shortly after arriving at Illinois, we acquired several Link General Aviation Trainers, or GATs, to add to our inventory of learning resources. These GATs even had communication radios, VORs, ILS, and ADF. Now that was progress! Next we replaced the CH7FC Aeroncas with brand new modern Piper Cherokee 140s, which also had modern radios, including VORs, ILS, and ADF. More progress! At Illinois, we also modified the program to require students to train in pairs, so that for every hour of experience they gained at the controls, they spent another hour in the back seat watching and learning as the other student received training. More good progress!

I left the University of Illinois in 1979 to join the United Technologies Corporate Aircraft Department. During my 12 years with UTC, I have observed our pilots receive simulator training and evaluation for the Beechcraft King Air, Cessna Citation, Rockwell Sabreliner, Gulfstream III, Gulfstream IV, Boeing 737, Boeing 727, and the SK76 helicopter. Talk about progress, I was a part of it now!

United Technologies is a firm believer in the crew concept, utilizing cockpit resource-management philosophies all the time. All of our pilots complete the United Airlines/Scientific Methods Cockpit Resource Management course and they also participate in FlightSafety's Practical Cockpit Management programs. The progress continues!

UTC presently operates 10 aircraft, including 2 SK76Bs, 2 Cessna Citations, 4 Rockwell Sabreliners, 1 Gulfstream III, and 1 Gulfstream IV. All of our pilots are assigned to fly two different types of aircraft, the result being that our 16 SK76B pilots also fly the Citation, Sabre, or Gulfstream as their other aircraft. Most fly the SK76 and a Sabre or Gulfstream to provide each of our pilots with one "go somewhere far and fast aircraft" and one "go slow and come home every night" aircraft.

Several years ago when we reduced our fleet size, we sold some fixed-wing aircraft, including the B-727 and B-737, and increased our SK76B "fleet" from one to two. We had two options: lay off eight very experienced fixed-wing pilots and hire eight helicopter pilots or train those eight fixed-wing pilots to also be helicopter pilots. Keep in mind these eight airplane pilots all hold the Airline Transport Pilot Certificate, Airplane Multi Engine Land, with Type Ratings in at least several jet aircraft, and thousands of hours of experience. Well, we did the right thing. We developed a program, in conjunction with FlightSafety, to cross-train those eight pilots onto the SK76B, joining the eight pilots already flying both fixed and

rotary wing. The fixed-wing-to-SK76-helicopter program is shown below.

We encountered two situations during the program that suggested our progress in pilot training and evaluation had taken three giant steps backward. The first was learning that these pilots could not earn their Helicopter Instrument Add On Rating in the SK76B simulator. Now here's a simulator with every gadget our aircraft has—just what our pilots need to know about if they are going to fly IFR in the SK76. But...oh no...the SK76B simulator is not approved for this. In fact **no exemption for this has ever been granted for even an airplane simulator**. So there we were, professional ATP fixed-wing pilots, thrashing about in a Hughes 300 helicopter for two more weeks (most of that time trying to get somewhere where the necessary Nav aids could be found) earning a Helicopter Instrument Add On. No EADI, no EHSI, no DDAFCS, no EEC, not much of anything relevant to our IFR needs.

And do you know, that Helicopter Instrument Add On qualified those guys to fly IFR in any number of other types of helicopters, most of them far more complex than

the Hughes 300. Now, let me tell you—that SK76B simulator is certainly as useful as a Hughes 300 for training and evaluating a pilot earning a Helicopter Instrument Add On rating, especially since the rating is category- and class-generic, and not specific to just one type of aircraft. So, while those of us in this room were busy "studying the issue," those eight pilots and their passengers were short-changed. They were not provided reasonable access to modern technology.

The second suggesting of a definite lack of progress in recognizing the value of today's simulator for pilot training and evaluation was when we learned they could not take their ATP Rotorcraft Helicopter Add On flight check in the SK76B simulator.

Those eight pilots have regularly attended FSI pilot recurrent-training twice a year, once for their airplane (Citation, Sabre, or Gulfstream) and once for the SK76B. Each session includes 3 to 5 days of very thorough classroom and simulator training. Operationally, they are flying both left and right seat, VFR and IFR, out of such places as the several very tight Manhattan heliports and the very busy New York Kennedy and LaGuardia airports.

Task	Location	Weeks needed
1. Instrument written exam	East Hartford (Rentschler Airport)	1
2. Commercial add on Hughes 300 for about 5 weeks (and classroom)	Vero Beach, Florida	5
3. Instrument add on Hughes 300 for about 2 weeks (and classroom)	Vero Beach, Florida	2
4. SK76 familiarization SK76 exterior and interior familiarization SK76 familiarization flight	East Hartford	1
5. SK76 pilot initial SK76 simulator and classroom	West Palm Beach International	2
6. SK76 line checks SK76 route familiarization including heliports, helipads, helistops, ATC, navigation	East Hartford	1
Total		12
7. Left seat SIC only Flying about half of the flights left-seat		6 months
8. SK76 pilot recurrent SK76 simulator and classroom		1 week
9. Left or right seat SIC Flying about half of the flights right-seat		18 months
10. ATP rotorcraft/helicopter add on written		
11. SK76 Pilot recurrent SK76 simulator and classroom		1 week
12. ATP rotorcraft/helicopter SK76 type rating check		

After 2 to 3 years of this experience, they are more than ready to add the Rotorcraft Helicopter Category and Class to their Airline Transport Pilot Certificate along with the SK76B Type Rating. Ideally, they should be able to complete their flight check while attending the FlightSafety SK76B Pilot Recurrent program, where a professional instructor/examiner could observe all of their cockpit resource-management and flying skills. In fact, in the normal 9 hours of simulator flying that a crew does during recurrent training, the vast array of IFR situations and systems malfunctions far exceeds what could ever be done in the aircraft.

Once again, while we continue to "study the issue," those eight pilots, and many more like them, along with their passengers, are being shortchanged because they cannot complete their ATP/Type Rating checks in the simulator.

Keep in mind that conducting the check in the aircraft (1) requires putting a \$5 million dollar aircraft out of passenger service for half a day; (2) flying as much as 4 hours to get to the examiner, take the ride, and fly home (cost: \$5000+); (3) causes the pilot to be unable to do many of the very important tasks normally done in the simulator; and (4) places both the aircraft and its occupants in a high-risk situation.

Now wait until you hear what the SK76B is **not** approved to do for the ATP/Type Rating flight check. Certification credit is **not** approved for the following: (1) 360 turns at a hover, (2) normal takeoff from a hover, (3) manually flown precision approach, and steep approach to, and landing at, a helipad. Remember the 7 weeks of a Hughes 300 flying that occurred 2 to 3 years earlier? Well, they hovered and they hovered and did

pedal turns then. I cannot imagine any pilot with the experience necessary to apply for the helicopter ATP not being able to hover, do pedal turns, fly a steep approach, or do a simple ILS approach.

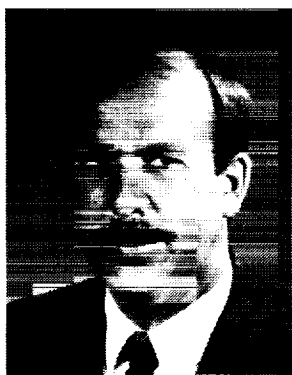
Folks, we must focus on the many values the simulator has to offer, and stop dwelling on its few shortcomings, especially when those shortcomings are not relevant to the particular level of training and evaluation at issue.

The SK76B simulator has many, many advantages over the aircraft, for training, or, conversely, the aircraft has many shortcomings when compared with the simulator. Yet, we are very willing to approve training and evaluation in the aircraft while at the same time being extremely critical of the simulator.

We must also not forget that any training resource, be it chalkboard, textbook, aircraft, or simulator, is only part of a total training and evaluation program, and the instructor/examiner is generally the critical difference between a good program and a poor program. If only the instructor/examiner received as much attention and funding as the aircraft and simulator do.

Let me summarize with the following four points:

1. We should continue to design and build highways and buildings that are earthquake-proof.
2. We should continue our quest for the perfect simulator.
3. We should accept the present-day San Francisco Bay Area, even with its faults, as a very desirable place to visit, work, and live.
4. We should accept the present-day simulators, even with their faults, as at least equal to, and in many cases, superior to the actual aircraft as a pilot-training and evaluation resource.



Curt Treichel is manager of training at the Corporate Aircraft Department of United Technologies, Inc. He is responsible for the training of 130 administrators, aircrew, cabin attendants, maintenance technicians, and managers in a corporate flight department operating 12 aircraft, including the SK76B. Mr. Treichel has studied transfer to training from simulators to aircraft for the University of Illinois Institute of Aviation. He has a B.S. degree in business administration from Defiance College and an M.S. degree in vocational and technical education from the University of Illinois. He has Airline Transport Pilot certificates for Airplane Multi-Engine Land and Rotorcraft-Helicopter, and ATP-type ratings for the CE-550, NA-265, and SK76.

